

**ABSTRACT OF THE DISCLOSURE**

A variable speed wind turbine employing a rotor connected to a multiplicity of synchronous generators with wound field or permanent magnet rotors. A passive rectifier and an inverter are used for power transfer back to the grid. A Turbine Control Unit (TCU) commands a required generator torque based on rotor speed and power output of the turbine inverters. Torque is controlled by regulating the DC current by control of the inverter. A main-shaft-damping filter is provided by measurement of the DC bus voltage. In high winds the turbine remains at a constant average output power through a constant torque command and a varying pitch command to a rotor pitch servo system. A set point is fixed at the inverter output such that output VAR load is minimized running the turbine at very nearly unity power factor. Dynamic VAR and power factor control is provided by a separate VAR apparatus.